



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE SCIENTIFIC MONTHLY

NOVEMBER, 1919

THE PSYCHOLOGY OF DAYLIGHT SAVING

By Professor GEORGE T. W. PATRICK

THE STATE UNIVERSITY OF IOWA

NOTWITHSTANDING the President's veto, a bill repealing the daylight saving law in the United States was passed by an overwhelming majority in the Senate and House. One senator had on his desk a petition for the repeal of the law signed by more than one hundred and twenty thousand names, all from one state. In a typical mid-west town of twelve thousand, a straw vote revealed more than ten to one against the plan. Daylight saving in America thus passes for the moment into history and by many unthinking people will no doubt be remembered as a crazy freak of theorists or an unholy attempt to meddle with the clock.

Nevertheless, daylight saving is sure to be revived and there are already strong movements throughout the country to introduce it again next summer in separate communities. Furthermore, the statement may be made and easily maintained that the daylight-saving plan is thoroughly sound and desirable both from the economic and scientific standpoint, wholly conducive to public welfare and practically free from serious objections.

The formidable array of arguments marshaled against the plan on the floor of Congress were riddled with fallacies, which a little patience and candor might have exposed. Any careful and serious consideration of the subject was prevented by a wave of reaction and the clamor of the farmers of the middle west who were inconvenienced by the law. It was simply another instance of a clamorous minority and an indifferent public.

Now that the law has been repealed and we have leisure to study the subject more carefully, it will be instructive to examine some of the grounds for daylight saving and some

of the arguments against it. There are also certain curious psychological factors in the case, which it will be interesting to observe.

On the face of it, daylight saving seems to be an unmixed gain. The law provided that the clock should be advanced one hour every spring and set back one hour in the fall. Unfortunately in this country the change was made to take place too early in the spring and too late in the fall, a mistake that should be remedied in any future attempts. Now, since few people get up at daylight in the summer, the daylight saving plan gives us an extra hour of sunlight in place of an hour of artificial light in our waking day. Since sunlight is cheaper than gas or electric light, being absolutely free for the taking, and since it is also brighter and healthier, and since, furthermore, the plan involves no change in the routine of our daily life, merely substituting one hour of sunlight for one hour of darkness, it would seem at first view that there could be no possible objection to it, except on the part of the gas and electric companies.

If we note also the fact that the plan has been adopted by practically all the European countries, resulting in an enormous saving in expense in artificial lighting and adding apparently to the health, happiness and comfort of the people, the mystery deepens as to the cause of the objection to it in this country. The subject offers a unique chapter in popular psychology and reveals certain new features not hitherto brought into the discussion. Although sunlight is cheaper, healthier and brighter than artificial light and more convenient even than pressing an electric button, it appears that people *prefer* the artificial light and the reasons for this preference have to be taken into account. If these reasons are valid, then, in spite of all the conspicuous arguments for the plan from the economic, hygienic and social point of view, we might still have to revise our opinion as to the value of it.

But first let us orient ourselves on the whole subject. It has been determined that adult men and women need about eight hours of sleep daily. This leaves sixteen hours of the twenty-four for our waking life. In the platform of labor parties, for instance, we read of eight hours for work, eight hours for sleep, and eight hours for recreation. Now it happens that in the summertime in the latitude of New York and our great middle west, the daylight day is sixteen hours in length. It is light at about four in the morning (that is, by the old

time) and darkness falls at about eight in the evening. After eight o'clock it is necessary to use artificial light. Thus the natural daylight day in the summer months exactly fits the human working day and there is no doubt that during the age-long history of man on the earth, reaching back hundreds of thousands of years, he has been accustomed to rise at daylight and go to sleep at dark, as do the birds and other lower animals. Only the predatory birds and animals, who have found it to their advantage to prey upon the quiescent nocturnal life, reverse this order.

Gradually, however, with the invention of artificial light, and especially since the invention of the electric light, there has come about a displacement between the daylight day and the human day, so that now we rise two or three, or even four or five hours, after daylight and remain up two, three, or even five or six hours, after dark, using artificial light. This displacement has taken place in human history very recently, just yesterday, relatively speaking. Even as late as the time of the Greeks and Romans, there was relatively little displacement. In one of Plato's dialogues the young man Hippocrates thumps loudly on Socrates' door before daybreak, eager to hasten to the place where Protagoras, the celebrated sophist, was instructing Athenian youth.

The reasons for this displacement of the human working day are interesting. We shall inquire presently into this curious bit of psychology. But the displacement itself is going on faster than ever at the present time, owing in large part to the discovery of the convenient, brilliant and fascinating electric light. Every year it seems to be a little harder to go to bed or to get up at the old accustomed time. Automobiles, unlike the horse, travel as well at night as by day and keep increasingly late hours. College and high-school students study later at night or engage in social activities. To go to bed early is not just the thing. It is a little out of date. To meet the requirements of our complicated modern life, more and more industries continue through the night, for instance, railroads and steamship lines, hotels, police service, news collecting and newspaper printing, etc. Quite apart, however, from these necessary night occupations there is an increasing tendency to shift the day farther and farther forward. Without doubt the number of people who sleep till noon is constantly increasing. If the matter is left to adjust itself, one naturally wonders how far we shall go in the substitution of night for day. Will day and night finally be wholly transposed?

Apart from psychological considerations, this displacement of the day seems to be the purest kind of folly. The morning hours with the noisy singing of the birds and the streaming light of the sun are not well adapted to sleeping. At nightfall, which in the summer takes place at about eight o'clock by the old time, nature is still and the conditions for sleep are perfect.

This loss of the morning sunlight was so evidently a net loss to the nation, that the daylight-saving plan was devised to correct it. It does not attempt to correct the whole discrepancy between the natural day and the human working day, but only one hour of it. And it attempts to do this not by making any change whatever in our daily program, but simply by setting the whole program one hour earlier by the sun, leaving it precisely as before by the clock. It is as if a good God had said:

My people have shifted their day so that they lose two or three hours of the precious morning sunlight and have to use artificial light in the evening. How shall I correct this? In order not to disturb their habits or their customs or their clocks, I will quietly order the sun in the summer-time to rise one hour later and set one hour later at night. This will bring their day and my day more nearly together and many of them will hardly know that any change has been made. They will simply enjoy the sunlight an hour longer every evening.

Of course, the same effect could be accomplished by advancing in the middle of some dark night every clock in the land. This was the way that Congress attempted to attain the desired end. So far as the daylight-saving law has failed of its full benefits, it has been because many of us did not understand that we were to make no change in our daily schedule. We should have gone on precisely as before in every detail. If we had been accustomed to rise at six o'clock, breakfast at seven, go to school at nine, lunch at twelve, dine at six and retire at ten, we should have gone on doing all these things at precisely the same time by the clock. Then no change or disturbance whatever would have taken place in our lives, only we should have enjoyed an hour's additional sunlight in the evening.

True, the great majority of us did this and we have found the added sunlight the greatest benefit. We have enjoyed our morning's sleep better because it was dark and quiet. Then the day has followed exactly as before, except only that when we have gone to work at the usual hour the sun was not so high nor so hot and, it being summertime, this has been greatly appreciated, for the last hour of our work in the afternoon had often been very hot and uncomfortable, and now we have been free during this last hour. This has given us after work

at night or after school a delightfully long evening for play or sport or picnics, or, if we prefer, for work at home. The home garden has become more popular and this added hour of sunlight after working hours has given many of us an opportunity to work in our gardens or with our flowers. To be sure, under the old plan we could get up in the morning and work in the garden, but the gardens in the morning were wet with the dew and work was unpleasant. The result has been a very large increase in the number and size of our gardens, with a corresponding increase of wealth and health.

Now that the war is over, if the daylight-saving plan should be continued, decided benefit in respect to morals may also be expected, for darkness is a cover for every evil thing. We know how our cities and towns in the interest of morals flood the streets, alleys and parks with electric light. Sunlight accomplished this end so much the better.

Still greater will be the benefit to our national health. Sunlight is the enemy of almost every form of disease. The substitution of an hour of daylight for an hour of artificial light means for many of us another hour of outdoor life with outdoor sports or outdoor work. An hour of lamp light means an hour of indoor life. Since some of our most insidious modern diseases are the results of our increasingly sedentary and indoor life, the benefit of the daylight-saving plan to our national health must be obvious.

Incidentally too there will be a decided benefit to the eyes. Our modern life involves so great a strain upon the eyes in reading and in all manner of fine work, and so much of this reading and writing is done at night by the aid of artificial light, that the substitution of an hour of sunlight for gas or electric light will be of supreme value to us. In fact we are coming to realize that something must be done to relieve the strain upon the eyes. Statistics from our recent military draft showed that nearly thirty-five per cent. of our young men were physically unfit for military service, and of the various defects causing this unfitness defects of the eyes stood at the head of the list, more than one fifth of all the rejections being due to this cause.

While no doubt the greatest advantage of the daylight-saving plan is in the matter of health in the substitution of sunlight for artificial light one hour each day in the summer, nevertheless it is the saving in expense which appeals to us most forcibly. Artificial illumination in homes, parks, streets,

hotels, railroad stations and in all shops, offices, stores, etc., that are open in the evening in summertime must begin under the old plan about eight o'clock in midsummer and earlier in the spring and fall, while under the new plan it begins an hour later. The city of Vienna is said to have reduced its gas consumption in one summer by the daylight-saving plan by 158 million cubic feet, resulting in a saving of \$142,000. One of the large electric-lighting establishments in Paris reported that when the clock was turned back in October its nightly peak load of 35,000 kilowatts of current jumped in a few days to 53,000 kilowatts. It is estimated that England saves \$12,500,000 in coal annually by the new method and the saving for the United States is estimated at \$25,000,000 annually.

The coal supply of the world is not going to last forever. Many think that the shortage will soon begin to be felt in this country. Coal for keeping us warm in winter and in lighting our homes in winter is indispensable. To lie in bed in the morning when the sun is shining and then use our precious supply of coal for illumination at night would seem to be an inexcusable extravagance. Conservation of coal will soon be absolutely necessary. It may well begin by daylight saving. The saving in coal, however, is only a part of the total financial gain of the new daylight plan.

If under such circumstances it seems difficult to explain the opposition to the plan, the difficulty is increased when we recall the general favor with which the plan has been received in European countries and indeed with large classes in America. On June 14 of the present year *The Literary Digest* published the results of a wide inquiry among labor unions and workingmen's organizations as to the opinion of laboring men about the daylight-saving law. With very few exceptions wholly favorable responses were received from mine workers, electric workers, laundry, brewery, flour, cereal, flint glass, garment, soft drink, and boot and shoe workers' unions and from organizations representing machinists, hod carriers, blacksmiths, barbers, pressmen, and from hotel and restaurant workers. Furthermore, the new plan appears to be very favorably received by physicians, lawyers, university men, public-school teachers and business men. It gives them longer summer evenings for gardening, motoring, golf, etc.

The immediate cause of the attempt of Congress to repeal the law was the loud and vigorous protest of the farmers against it. If we consider the unusual and unparalleled prosperity of

the farmers during the time in which daylight saving has been in force, and furthermore the rather unconvincing character of the arguments which they brought against it, and still further the very feeble fight which advocates of the plan offered in its defence, it becomes evident that there were other factors involved in the situation. One of these factors no doubt was the extreme conservatism of the American people and their dislike of any legislative action which seemed to interfere with the established routine of their daily lives. The change to standard time, for instance, which was effected by act of Congress some years ago and which has resulted in great benefit and convenience, met with serious opposition in many quarters and it is said that the old time is still adhered to in some localities. Again, all attempts to discard our antiquated and inconvenient system of weights and measures and to substitute the scientific metric system have met with opposition. For a body of legislators at Washington to interfere with the affairs of our daily life and tell us what time to get up and what time to go to bed was carrying things too far. As a war measure we could submit to this or any indignity, but not in time of peace. When the daylight-saving scheme was first brought forward in England and America it was opposed even by men of science, and if the farmers have offered unsound arguments against it, so did the scientists. It was argued, for instance, by the English journal, *Nature*, that England should not adopt the plan for the reason that it had been adopted by Germany and that Germany had probably adopted it because England had not! This writer closed his editorial with the remark that daylight saving would be a leap in the dark! This was every bit as bad as the farmer who wrote to his local paper that the crazy daylight law should be repealed because working in the corn-field in the early morning brushed the dew from the corn. A slight computation would have shown this writer that the chances of any given hill of corn having the dew brushed from it *once* during the summer, owing to the earlier hour of the farmer's day, would be only one in ten. Many letters were written by farmers and farmers' wives to local papers protesting against the unholy interference with God's time.

But let us consider the real arguments against the plan of daylight saving as they were presented by the farmers through their representatives in Congress. One objection was that the hottest time of the day was between twelve and one o'clock (according to the old time) and under the new plan the farmer

and his horses must be back in the field during this hour. This argument has all the appearance of being manufactured in some newspaper office, for any observing farmer knows, as any thermometric chart will show, that the hottest part of a summer's day is not at that time, but between two and four in the afternoon, usually between two and three. In midsummer in the Mississippi Valley the maximum temperature occurs at about three o'clock, while even at six the temperature has fallen often only three degrees Fahrenheit. The great difference between the temperature of the first morning hour of the working day and the last evening hour, reveals the advantage of the new plan to all workers during the hot weather, since it substitutes the cool morning hour for the hot evening hour.

Second, it was complained by mothers, not only in the country but in the city, that under daylight saving the children could not get ready for school in time, since it began an hour earlier. The reply to this is, of course, that school does not begin an hour earlier but at precisely the same time, namely, at nine o'clock. If the children were accustomed to get up at five, six, seven or eight o'clock, they could continue to do so under the new plan and would have the same time for preparation as before. In any case they would not have to get up before light, for it is light at five o'clock by the new time in midsummer and at half past five on May 1. It is probable that the children slept later under the new plan and they slept later because they sat up later. In other words, they did not fully accept the daylight-saving plan but made a change in their hour of retiring, when it came into effect. Indeed if school began at seven, there should be no difficulty in getting there on time. It's a matter of habit. The church hour has been gradually put later and later until now it is at eleven o'clock, and yet many people are late for church.

Third, it was complained that the dairymen had to get up earlier in the morning, perhaps before daylight, in order to get the milk ready for the morning trains. Incidentally one can not help noting here a psychological factor, namely, our willingness to use artificial light in the evening but our dislike to using it in the morning. No doubt the advancing of the clock has made it necessary for some dairymen to get up before daylight and has caused them considerable inconvenience. But for these dairymen to ask that the rest of the hundred million people of this country should sleep another hour every morning in order that they, the milkmen, should not have to get up before day-

light would be unique, to say the least. If, for instance, we imagine a great nation accustomed to get up at daybreak and go to bed at dark and living in large cities and demanding fresh milk for their breakfasts, some one would have to get up before light to supply the demand. This inconvenience could no doubt be avoided if all the people except the dairymen should sleep several hours later in the morning, but no sane man would propose to remedy the difficulty in this way.

Seen in this light, the other difficulties experienced by the farmers fall into their proper perspective. In advocating the repeal of the law, the farmers have laid special stress upon two difficulties. First, owing to the dew, the early morning hour is not favorable for farm work. And second, if to avoid this the farmer begins and ends his day's work at the former time, his hired men make trouble, since they wish to stop work when the town and city people do. Furthermore, if the farmer works an hour longer than the city people, he is late for any entertainment or meeting which he may wish to attend in the city in the evening. As these difficulties were presented to the country, they were offered as separate and cumulative objections. They are, of course, alternatives. If the farmer begins his work an hour earlier than formerly and experiences trouble from the dew, he does not experience the other troubles, and *vice versa*.

Perhaps none of these difficulties is so serious as was imagined. The complaints about the dew came principally from the farmers of the Mississippi Valley and pertain only to haying and harvest time. The dew does not interfere with other farming operations, such as plowing, disking, seeding and planting and cultivating corn. During harvest time, as the dew is sometimes on the grass and grain until nine or ten o'clock, it is often in any case necessary for the farmer to begin and end his work at later hours. The need of synchronizing farm and city hours of labor during three or four weeks of the year is not so great as to ask a whole nation during the whole summer to begin its day's work an hour later in the morning and live by artificial light an hour later at night.

It was also loudly proclaimed by the opponents of the daylight-saving law that if the city people want to get up earlier in the morning, they can do so, but let them not meddle with the clock. But if the city people got up earlier, they would begin their working day earlier and the farmers' two difficulties would appear as before. And it should be remembered that it is a question of social welfare in which everybody is interested

and that the habits of the people will not be changed, although theoretically they could be, without some concerted legislative action. It is probable that the farmers themselves, when the matter has been accurately presented to them, accustomed as they are to rise and retire early, will welcome a change which shall encourage other people to do the same.

It turns out, therefore, that the objections to the daylight-saving law are rather petty and not of serious moment. Perhaps the strongest objection is one which apparently was not urged by the opponents of the law, namely, that a great many people in America have to sleep in upper rooms which are very hot in the evening and that they therefore sit up until it is cool and so under the new plan do not get enough sleep. There are no doubt ways in which this difficulty may be met and it is not of such seriousness as to weigh against the exceeding great benefits of the new plan.

After all, the psychological factors of the situation are the ones which present the greatest obstacles to daylight saving. There is a certain fascination about artificial light and a certain human predilection for night life that must be reckoned with. Whatever the reason for this preference may be, it is so strong that if by legislative action we were to set forward the clock one hour both summer and winter, in the long run it is probable that nothing would be gained. We should soon be getting up an hour later by the clock, should go to school at ten, to church at twelve, and our whole daily schedule would be correspondingly advanced. It is only by adopting the plan for the summer months that any really permanent advantage may be gained.

But what is the cause of this shifting forward of the human day so that it no longer corresponds with the solar day? Why do we tend to get up later and go to bed later as the years go by? There are several reasons and the psychologists are able with considerable success to fathom them. The first is a very simple and evident reason. As life becomes complicated and interesting, it is difficult to get through with the duties of the day in the usual time and so we sit up later at night, and then, in order to obtain the necessary sleep, we have to get up later the next morning—and the habit grows.

Another minor cause is found in the fact that at night, when most of the world sleeps, some will find it to their advantage to be awake. Just as certain predatory birds and animals roam or prowl at night to take advantage of the sleepers, so certain human occupations, lawful and unlawful, flourish under cover

of the darkness. Certain kinds of crime flourish at night and night is proverbially the time for love making in all its phases. Many students, writers, inventors, etc., work at night simply because it is quiet and greater mental concentration is possible. Some night workers report a peculiar feeling of power and sovereignty at night, as though one possessed the world. Obviously, however, these advantages of night work will disappear in proportion as the night hours are used by all. Already the morning hours are becoming the really quiet time for work. Those who find the night hours better for concentrative or creative work have formed an expensive mental habit. If the habit were reversed, the morning hours after refreshing sleep would be found the most productive as well as the most economical.

But probably the real reasons for our ever increasing night life are of a profound psychological nature. There are two distinct principles involved here. First, artificial light exercises upon us a peculiar fascination not possessed by sunlight. This is due to certain mental associations coming down from the primitive life of man. Fire is the original source of artificial light and fire and light are associated in the mind. The camp-fire or the fire on the hearth suggest feasting and joy after the labor of the day and in winter suggest warmth and comfort. After the strenuous labors of the day in forest and field comes the pleasant relaxation of the evening, and whether this takes the form of feasting or dancing or music or the telling of tales, the camp-fire is the center of this joyous social life. This deep-seated association fixed by centuries of ancestral habit explains that peculiar feeling of pleasure which we have when the lights are lighted at night. When theatrical performances are held by day, no matter how well lighted the theater may be, we all prefer to darken the windows and use the electric lights, while the lure of the great city is partly due to the glitter of the brilliantly lighted streets and places of amusement.

The other reason for the peculiar charm of night life is due to still more recondite mental associations. To live by night and sleep by day is a sign of class distinction. The man who works at common manual labor must rise with the sun and go to work. Not so the leisure classes. They can rise when they choose and sit up as late as they wish. Night life, therefore, gives what Professor Thorstein Veblen would call "honorific status." It is only another case of "conspicuous waste." To go to bed early is not just the thing from the social point of view. To sit up late is a sign of a certain "invidious distinction." To

sit up very late or to lie in bed till noon is a sign of affluence. We often boast of late hours but we are a little ashamed of going to bed early. In Russia, for instance, before the war, class distinctions were quite marked in this way. Banks, business and professional offices, etc., opened at ten o'clock. Lunch was served at two, dinner at seven, evening tea between eleven and twelve, regular social activities continued till two or three and special social functions till four or five in the morning. The laboring classes, on the other hand, must get up early and retire early at night. Night life thus became a form of "ostentatious display."

On the whole, then, it appears that the motives which have led to the substitution of the night life for the life of the sunlight day have little or nothing to recommend them, whether we consider them in their economic, hygienic, moral, social or psychological relations. They rest upon an obsolescent social philosophy and outgrown anthropological habits. They can not prevail at a time like this when we recognize the dignity of labor, the importance of health and the need for conservation of our material resources. The daylight-saving movement is therefore distinctly a modern movement, representing just what the present age stands for, namely, health, economy, conservation and common sense.